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% Part 3
u = @(n) 1.0 .* (n >= 0) .* (mod(n, 1) == 0);
i = 0.075;

y = zeros(2,2);

% Find solution with recursion
for n = 0:43
    y(1,1) = (1+i) * (y(1,1) + 5500 * (u(n) - u(n-10)));
end

for n = 0:33
    y(1,2) = (1+i) * (y(1,2) + 5500 * (u(n) - u(n-33)));
end

% Find solution with z-transform solution
n = 43;
y(2,1) = 5500 * (1+i) / i * (((1+i)^(n+1)-1)*u(n) - ((1+i)^(n-9)-1)*u(n-10));

n = 33;
y(2,2) = 5500 * (1+i) / i * (((1+i)^(n+1)-1)*u(n) - ((1+i)^(n-32)-1)*u(n-33));

% Find principle
P = zeros(2,1);
P_s = strings(2,1);
P(1) = 10 * 5500;
P(2) = 33 * 5500;

% Format solutions
y_s = strings(2);
for i=1:2
    for j=1:2
        y_s(i,j) = num2bank(y(i,j));
    end
    P_s(i) = num2bank(P(i));
end

y_s

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y_s = 2x2 string array
    "977,971.00"    "836,971.33"
    "977,971.00"    "836,971.33"

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P\_s

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P_s = 2x1 string array
    "55,000.00"

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"181,500.00"